STX88602

STX Form Factor SoM

Equipped with VIA EBGA Low Power CPU

User's Manual

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April 2004, Version A1
Printed in Taiwan

ESD Precautions

Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This helps to discharge any static electricity on your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

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Chapter 1
Introduction

1.1 General Description

AXIOMTEK's STX88602 is a STX form factor SoM (System On a Module) which is with VIA EBGA low power consumption processors; such as, Eden and C3 families, VT8606 core logic and integrated S3 Savage4 graphics controller with CRT/LCD/TV-out, VT82C686B with multiple I/O features integrated, Realtek RTL8139C/C+ fast Ethernet controller. and AC-link interface for external audio Codec output. In addition of onboard features which are integrated on STX88600, the STX standard interface provides 4 PCI Masters and ISA output for expansion design purpose applied on the related Baseboard.

With Axiomtek's STX SoM, customers are capable of maintaining the same hardware kernel and adapt various I/O combinations for different application purposes.

1.2 Specifications

- Processor:
  VIA Eden 400MHz, 667MHz, 800MHz CPU
- Chipset:
  VT8606 (Twister-T) + VT82C686B
- BIOS:
  Award BIOS with DMI, Plug-and-Play & Y2K Compliant in 4Mbit Flash ROM SmartView VGA BIOS Function; integrated Ethernet RPL and PXE Boot ROM features
- IDE Support:
  - 2 channels up to 4 devices (IDE1 through STX interface connector, IDE2 through AXIOMTEK 41Pin FPC connector)
  - PIO Mode 0-4, DMA Mode 0-2 and Ultra DMA/33/66/100
  - LS-120 & ZIP Bootable
- Multi I/O support:
  - One floppy port (STX interface connector) supporting up to two devices (LS-120 & ZIP Bootable)
  - One SPP/EPP/ECP parallel port (STX interface connector), LS-120 supported
  - Two 16550 UARTs compatible serial ports (STX interface connector)
  - IrDA (STX interface connector) for wireless communcation
- Keyboard / Mouse support (STX interface connector)
- Real Time Clock:
  Integrated in VT82C686B on STX88602
- Memory:
  1x144-pin SODIMM socket supports SDRAM module maximum up to 512MB

- Grapgics:
  - VT8606 integrated with UMA VGA memory architecture, maximum sharing system memory up to 32MB
  - Supports CRT and LCD through STX interface connector
  - Supports TV-out and ZV port through AXIOMTEK 41-pin FPC interface
- Ethernet:
  - RTL8100C integrated on STX Module
  - Wake-On-LAN supported via ATX power supply
- USB Interface:
  4 USB ports (STX interface connector) with USB Spec. Rev. 1.1a compliant
- Expansion Bus:
  - Four PCI Bus Master
  - Standard ISA Bus
- Power Management:
  ACPI (Advanced Configuration and Power Interface)
- Dimensions: **96x90mm**

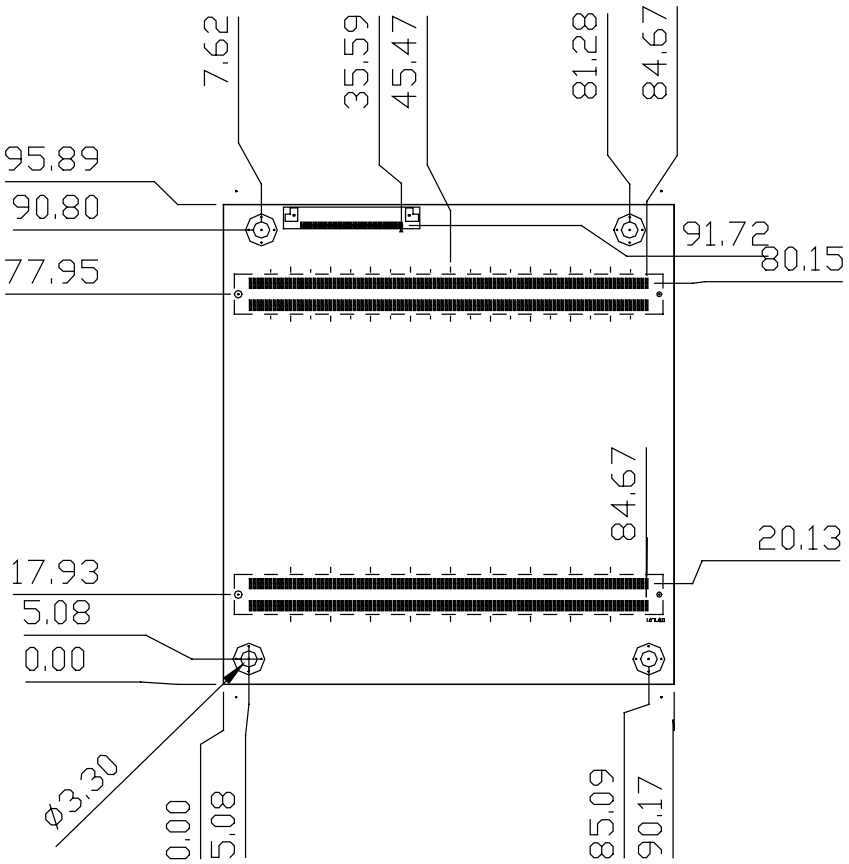
NOTE: *Specifications are subject to change without notice.*

1.3 Utilities Supported

- VIA Chipset Driver
- Ethernet Utility and Drivers
- VGA Drivers
- Audio Driver

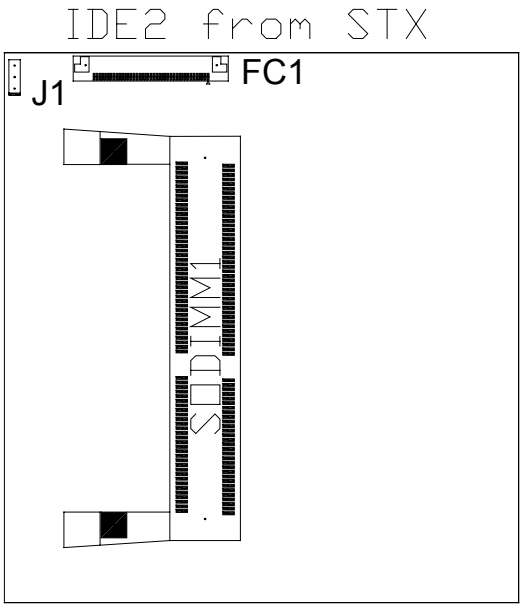
Chapter 2
Jumpers and Connectors

2.1 Board Dimensions

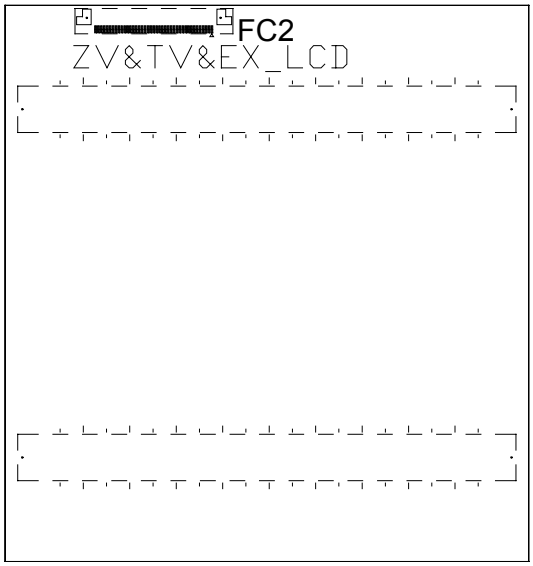


2.2 Board Layout and Fixing Holes

Front View Top Side



Front View Bottom Side



2.3 Jumper Settings

The jumpers on the **STX88602** allow you to configure your CPU card according to the needs of your applications. If you have doubts about the best jumper configuration for your needs, contact your dealer or sales representative. The following table lists the connectors on **STX88602** and their respective functions.

Jumper	Description	Default Setting
J1	CMOS Clear Jumper: default	Short 1-2

LED	Description
D5	+5VSB Power LED

Chapter 3
Installation

3.1 Completing Installation

To complete the installation, follow the steps listed below.

1. Make sure the power is OFF.
2. Set the configuration jumpers according to the jumper settings on Chapter 2.
3. Install the STX Module into the STX Evaluation Platform base board.
4. Connect the I/O cables and peripherals, i.e. floppy disk, hard disk, monitor, keyboard, power supply and etc. to the STB base board.

   NOTE: *The color of pin one is usually red or blue, while others are gray.*
5. Turn ON the system power.

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Chapter 4
Hardware Description

4.1 Safety Precaution

Disconnect the power Module from the STX88602 before your installation. Do not make any connections while the power is on because the sudden surge of power could ruin any sensitive components. Most electronic components are sensitive to the static electric charge. Therefore, before touching the STX88602 control board, always ground yourself to keep from any static charge. Use a grounding wrist strap and place all electronic components in any static-shielded devices.

4.2 CPU

The STX88602VEA supports an onboard EDEN 400,667or 800MHz CPU. Systems based on these CPUs can be operated under Linux, Windows 98, 2K, XPand MS-DOS environments. Moreover, the installed CPU determines system's performance.

4.3 BIOS

The system BIOS used in STX88602 is Award Plug and Play BIOS. The STX88602 contains a single 4Mbit Flash EPROM and supports power-on modification of the system BIOS.

4.4 System Memory

STX88602 has one onboard 144-pin SODIMM sockets, able to support 16MB, 32MB, 64MB, 128MB, 256MB, 512MB SODIMM modules, providing the user with up to 512MB system memory.

4.5 Device ID Select Table

Item	Device ID
PCI 1	AD 20 INT#(A ,B ,C ,D)
PCI 2	AD 21 INT#(D ,A ,B ,C)
PCI 3	AD 22 INT#(C ,D,A , B)
PCI 4	AD 23 INT#(B , C,D, A)

Note: Relation between PCI device number and IDSEL mapping depends on the used chipset and may differ on various STX Modules.

4.6 I / O Port Address Map

Address	Devices
000-01F	DMA controller #1
020-03F	Interrupt controller #1
040-05F	Timer
060-06F	Keyboard controller
070-07F	Real time clock, NMI
080-09F	DMA page register
0A0-0BF	Interrupt controller #2
0F0	Clear math coprocessor busy signal
0C0-0DF	DMA controller #2
0F1	Reset math coprocessor
0F8-0FF	Math processor
120	Disable watchdog timer operation (read)
121	Enable watchdog timer operation (read)
122	Watchdog
1F0-1F8	Fixed disk controller
200-207	Reserved
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel port #1
3B0-3BF	MDA video card (including LPT1)
3C0-3CF	EGA card
3D0-3DF	CGA card
3F0-3F7	Floppy disk controller
3F8-3FF	Serial port #1 (COM1)
3E8-3EF	Serial port #3 (COM3)
2F8-2FF	Serial port #2 (COM2)
2E8-2EF	Serial port #4 (COM4)

4.7 Interrupt Controller

NMI	Parity check error
IRQ0	System timer output
IRQ1	Keyboard
IRQ2	Interrupt rerouting from IRQ8 through IRQ15
IRQ3	Serial port #2
IRQ4	Serial port #1
IRQ5	USB/VGA
IRQ6	Floppy disk controller
IRQ7	Parallel port #1
IRQ8	Real time clock
IRQ9	Logic ISA
IRQ10	Serial port #3
IRQ11	Serial port #4
IRQ12	PS/2 Mouse
IRQ13	Math coprocessor
IRQ14	Primary IDE channel
IRQ15	Secondary IDE Channel

4.8 Connectors

The connectors on the **STX88602** allow you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on **STX88602** and their respective functions.

Connectors	Label
STX base board Connector	P1
STX base board Connector	P2
ZV from STX module	FC2
IDE2 from STX module	FC1
SOMIMM1	SODIMM Socket

4.8.1 STX Connector: P1, P2

This chapter provides a detailed description of STX Interface signals. The signals are arranged in functional groups according to their associated interface. All signals are de-scribed from STX Module point of view for example, input means direction from the STX Baseboard to the STX Module.

The following table shows pins arangement of either P1, P2 plug (used on STX Module) or J1, J2 receptacle (used on STX Baseboard).

Table 1. STX Signal Groups

Signal Group	Group Description	Pins Count
PCI	PCI Bus	60
ISA	ISA Bus	88
E-IDE	E-IDE Interface	28
FDD	Floppy Disk Drive Interface	15
PPI	Parallel Port Interface	17
SPI1	Serial Port 1 Interface	8
SPI2	Serial Port 2 Interface	8
IrDA	IrDA Interface	2
KB/MS	Keyboard and PS/2 Mouse Signals	4
USB1	Universal Serial Bus 1 Interface	3
USB2	Universal Serial Bus 2 Interface	3
ETH	Ethernet 10/100Mbit Interface	6
AC'97	Audio Codec '97 Interface	5

To be continued…

Signal Group	Group Description	Pins Count
CRT	CRT Interface	9
FPI	Flat Panel Interface	36
FEAT	Feature Signals	7
MISC	Miscellaneous Signals	9
JTAG	JTAG/Boundary Scan Signals	5
PWR	Power and Ground Pins	81
RSVD	Reserved Pins	6
Total		400

Table 2. STX P1 / J1 Connector Pinout

Pin	Name	Group	Pin	Name	Group
1	GND	PWR	2	NET_TX_P	ETH
3	ACT_LED#	FEAT	4	NET_TX_N	ETH
5	LNK_LED#	FEAT	6	N.C.(NET_TXCT)	ETH
7	DSK_LED#	FEAT	8	NET_RX_P	ETH
9	SPEAKER	FEAT	10	NET_RX_N	ETH
11	GNT3#	PCI	12	NET_GND	ETH
13	RST_BTN#	FEAT	14	V_SB	PWR
15	PWR_BTN#	FEAT	16	V_SB	PWR
17	WUE	MISC	18	PS_ON#	MISC
19	GND	PWR	20	AC97_RST#	AC'97
21	KBCLK	KB/MS	22	SDATA_IN	AC'97
23	KBDATA	KB/MS	24	BIT_CLK	AC'97
25	MSCLK	KB/MS	26	SDATA_OUT	AC'97
27	MSDATA	KB/MS	28	SYNC	AC'97
29	VCC	PWR	30	GND	PWR
31	EXT_SMI#	MISC	32	I2C_SCL	MISC
33	REQ3#	PCI	34	I2C_SDA	MISC
35	CPU_TD_P	MISC	36	GND	PWR
37	CPU_TD_N	MISC	38	IR_RX	IrDA
39	V_BAT	PWR	40	IR_TX	IrDA
41	VCC	PWR	42	V_CORE	MISC
43	AD0	PCI	44	VCC	PWR
45	AD1	PCI	46	VCC	PWR
47	VCC	PWR	48	AD2	PCI

To be continued…

Pin	Name	Group	Pin	Name	Group
51	AD3	PCI	52	GND	PWR
53	GND	PWR	54	C/BE0#	PCI
55	AD6	PCI	56	AD7	PCI
57	AD8	PCI	58	GND	PWR
59	GND	PWR	60	AD9	PCI
61	AD10	PCI	62	AD11	PCI
63	VCC3	PWR	64	VCC3	PWR
65	(CLKRUN#)	RSVD	66	AD14	PCI
67	AD12	PCI	68	AD13	PCI
69	AD15	PCI	70	VCC3	PWR
71	VCC3	PWR	72	C/BE1#	PCI
73	VCC3	PWR	74	SERR#	PCI
75	PAR	PCI	76	GND	PWR
77	GND	PWR	78	GND	PWR
79	GND	PWR	80	PERR#	PCI
81	LOCK#	PCI	82	STOP#	PCI
83	VCC3	PWR	84	VCC3	PWR
85	VCC3	PWR	86	VCC3	PWR
87	DEVSEL#	PCI	88	TRDY#	PCI
89	IRDY#	PCI	90	FRAME#	PCI
91	GND	PWR	92	GND	PWR
93	GND	PWR	94	GND	PWR
95	C/BE2#	PCI	96	AD16	PCI
97	AD17	PCI	98	AD18	PCI
99	VCC3	PWR	100	VCC3	PWR
101	VCC3	PWR	102	AD21	PCI
103	AD19	PCI	104	AD20	PCI
105	AD22	PCI	106	VCC3	PWR
107	USB2_P	USB2	108	AD23	PCI
109	USB2_N	USB2	110	PME#	PCI
111	USB3_P	USB3	112	GND	PWR
113	USB3_N	USB3	114	AD24	PCI
115	CLK3	PCI	116	C/BE3#	PCI
117	AD25	PCI	118	GND	PWR
119	GND	PWR	120	AD26	PCI
121	AD28	PCI	122	AD29	PCI
123	AD27	PCI	124	VCC3	PWR

To be continued…

Pin	Name	Group	Pin	Name	Group
125	VCC3	PWR	126	VCC3	PWR
127	AD31	PCI	128	REQ1#	PCI
129	AD30	PCI	130	REQ0#	PCI
131	VCC	PWR	132	VCC	PWR
133	VCC	PWR	134	VCC	PWR
135	GNT0#	PCI	136	GNT2#	PCI
137	REQ2#	PCI	138	GNT1#	PCI
139	GND	PWR	140	GND	PWR
141	CLK1	PCI	142	GND	PWR
143	GND	PWR	144	CLK2	PCI
145	CLK0	PCI	146	VCC	PWR
147	VCC	PWR	148	V_IO	PCI
149	FP_SCL	FPI	150	FP_SDA	FPI
151	RST#	PCI	152	INTD#	PCI
153	INTC#	PCI	154	INTA#	PCI
155	INTB#	PCI	156	FP_BKL_EN	FPI
157	GND	PWR	158	FP_EDGE	FPI
159	FP_VSYNC	FPI	160	FP_HSYNC	FPI
161	FP_DSEL	FPI	162	GND	PWR
163	FP_VDD_EN	FPI	164	FP_CLK_P	FPI
165	FP_BSEL	FPI	166	GND	PWR
167	FP_DE	FPI	168	FP_CLK_S	FPI
169	VCC	PWR	170	VCC	PWR
171	FP_D0	FPI	172	FP_D12	FPI
173	FP_D1	FPI	174	FP_D13	FPI
175	FP_D2	FPI	176	GND	PWR
177	FP_D3	FPI	178	FP_D14	FPI
179	GND	PWR	180	FP_D15	FPI
181	FP_D4	FPI	182	FP_D16	FPI
183	FP_D5	FPI	184	FP_D17	FPI
185	FP_D6	FPI	186	GND	PWR
187	FP_D7	FPI	188	FP_D18	FPI
189	GND	PWR	190	FP_D19	FPI
191	FP_D8	FPI	192	FP_D20	FPI
193	FP_D9	FPI	194	FP_D21	FPI
195	FP_D10	FPI	196	GND	PWR
197	FP_D11	FPI	198	FP_D22	FPI
199	GND	PWR	200	FP_D23	FPI

Table 3. STX P2 / J2 Connector Pinout

Pin	Name	Group	Pin	Name	Group
1	RESET#	E-IDE	2	GND	PWR
3	DD7	E-IDE	4	IOCHCHK#	ISA
5	DD8	E-IDE	6	SD7	ISA
7	DD6	E-IDE	8	RESETDRV	ISA
9	DD9	E-IDE	10	SD6	ISA
11	DD5	E-IDE	12	VCC	PWR
13	DD10	E-IDE	14	SD5	ISA
15	DD4	E-IDE	16	IRQ9	ISA
17	DD11	E-IDE	18	SD4	ISA
19	DD3	E-IDE	20	GND	PWR
21	DD12	E-IDE	22	SD3	ISA
23	DD2	E-IDE	24	DRQ2	ISA
25	DD13	E-IDE	26	SD2	ISA
27	DD1	E-IDE	28	VCC	PWR
29	DD14	E-IDE	30	SD1	ISA
31	DD0	E-IDE	32	ENDXFR#	ISA
33	DD15	E-IDE	34	SD0	ISA
35	INTRQ	E-IDE	36	PD66- (GPIO)	E-IDE
37	DMARQ	E-IDE	38	(GPCS#)	RSVD
39	DIOW#	E-IDE	40		RSVD
41	DIOR#	E-IDE	42	IOCHRDY	ISA
43	IORDY	E-IDE	44	GND	PWR
45	DMACK#	E-IDE	46	MEMCS16#	ISA 16
47	DA1	E-IDE	48	SBHE#	ISA 16
49	DA0	E-IDE	50	AEN	ISA
51	DA2	E-IDE	52	SMEMW#	ISA
53	CS0#	E-IDE	54	IOCS16#	ISA 16
55	CS1#	E-IDE	56	LA23	ISA 16
57	GND	PWR	58	SA19	ISA
59	DENSEL	FDD	60	SMEMR#	ISA
61	INDEX#	FDD	62	IRQ10	ISA 16
63	MTR0#	FDD	64	LA22	ISA 16
65	DR1#	FDD	66	SA18	ISA
67	DR0#	FDD	68	IOW#	ISA
69	MTR1#	FDD	70	IRQ11	ISA 16
71	DIR#	FDD	72	LA21	ISA 16
73	STEP#	FDD	74	SA17	ISA

To be continued…

Pin	Name	Group	Pin	Name	Group
75	WDATA#	FDD	76	IOR#	ISA
77	WGATE#	FDD	78	IRQ12	ISA 16
79	TRK0#	FDD	80	LA20	ISA 16
81	WP#	FDD	82	SA16	ISA
83	RDATA#	FDD	84	DACK3#	ISA
85	HDSEL#	FDD	86	IRQ15	ISA 16
87	DSKCHG#	FDD	88	LA19	ISA 16
89	GND	PWR	90	SA15	ISA
91	STB#	PPI	92	DRQ3	ISA
93	AFD#	PPI	94	IRQ14	ISA 16
95	PD0	PPI	96	LA18	ISA 16
97	ERR#	PPI	98	SA14	ISA
99	PD1	PPI	100	DACK1#	ISA
101	INIT#	PPI	102	LA17	ISA 16
103	PD2	PPI	104	DACK0#	ISA 16
105	SLIN#	PPI	106	DRQ1	ISA
107	PD3	PPI	108	SA13	ISA
109	PD4	PPI	110	MEMR#	ISA 16
111	PD5	PPI	112	DRQ0	ISA 16
113	PD6	PPI	114	REFRESH#	ISA
115	PD7	PPI	116	SA12	ISA
117	ACK#	PPI	118	MEMW#	ISA 16
119	BUSY	PPI	120	DACK5#	ISA 16
121	PE	PPI	122	SYSCLK	ISA
123	SLCT	PPI	124	SA11	ISA
125	GND	PWR	126	SD8	ISA 16
127	DCD1#	SPI1	128	DRQ5	ISA 16
129	SIN1	SPI1	130	IRQ7	ISA
131	SOUT1	SPI1	132	SA10	ISA
133	DTR1#	SPI1	134	SD9	ISA 16
135	DSR1#	SPI1	136	DACK6#	ISA 16
137	RTS1#	SPI1	138	IRQ6	ISA
139	CTS1#	SPI1	140	SA9	ISA
141	RI1#	SPI1	142	SD10	ISA 16
143	DCD2#	SPI2	144	DRQ6	ISA 16
145	SIN2	SPI2	146	IRQ5	ISA
147	SOUT2	SPI2	148	SA8	ISA
149	DTR2#	SPI2	150	SD11	ISA 16

To be continued…

Pin	Name	Group	Pin	Name	Group
151	DSR2#	SPI2	152	DACK7#	ISA 16
153	RTS2#	SPI2	154	IRQ4	ISA
155	CTS2#	SPI2	156	SA7	ISA
157	RI2#	SPI2	158	SD12	ISA 16
159	GND	PWR	160	DRQ7	ISA 16
161	USB1_N	USB1	162	IRQ3	ISA
163	USB1_P	USB1	164	SA6	ISA
165	GND	PWR	166	SD13	ISA 16
167	USB2_N	USB2	168	VCC	PWR
169	USB2_P	USB2	170	DACK2#	ISA
171	GND	PWR	172	SA5	ISA
173	USB1_OC#	USB1	174	SD14	ISA 16
175	USB2_OC#	USB2	176	MASTER#	ISA 16
177	DDC_SCL	CRT	178	TC	ISA
179	DDC_SDA	CRT	180	SA4	ISA
181	GND	PWR	182	SD15	ISA 16
183	CRT_G	CRT	184	WUE	MISC
185	CRT_GND	CRT	186	BALE	ISA
187	CRT_R	CRT	188	SA3	ISA
189	CRT_GND	CRT	190	VCC	PWR
191	CRT_B	CRT	192	SA2	ISA
193	GND	PWR	194	OSC	ISA
195	CRT_VS	CRT	196	SA1	ISA
197	GND	PWR	198	SA0	ISA
199	CRT_HS	CRT	200	GND	PWR

4.8.2 ZV from STX Module: FC2

The ZV-Port or Zoomed Video Port, allows direct transmission of video data from a STX Module to STB Base board. This connector also include EX_LCD singal and TV singal from STX Module.

FC2 connector is a 41 Pin 0.5m/m Pitch FPC/FFC-CONN ZIF 90D SMT type connector that provides interfaces for the following functions.

Pin #	Signal Name	Pin #	Signal Name
1	GND	22	GND
2	GND	23	ZVREF
3	ZVD0	24	ZVS
4	ZVD1	25	ZVCLK
5	ZVD2	26	GND
6	ZVD3	27	FPD24(TVD6)
7	ZVD4	28	FPD25(TVD4)
8	ZVD5	29	FPD26(TVD5)
9	ZVD6	30	FPD27(TVD7)
10	ZVD7	31	FPD28(TVD0)
11	GND	32	FPD29(TVD1)
12	GND	33	GND
13	ZVD8	34	FPD30(TVD3)
14	ZVD9	35	FPD31(TVVS)
15	ZVD10	36	FPD32(TVCLK)
16	ZVD11	37	FPD33(TVD2)
17	ZVD12	38	FPD34(TVHS)
18	ZVD13	39	FPD35
19	ZVD14	40	
20	ZVD15	41	
21	GND		

4.8.3 IDE2 from STX module: FC1

FC1 connector is a 41 Pin 0.5m/m Pitch FPC/FFC-CONN ZIF 90D SMT type connector that provides interfaces for the following functions.

Pin #	Signal Name	Pin #	Signal Name
1	GND	22	SDD0
2	BRSTDRV-	23	SDD15
3	GND	24	GND
4	SDD7	25	GND
5	SDD8	26	SSDDREQ
6	SDD6	27	SSDIOW-
7	SDD9	28	SSDIOR-
8	GND	29	SSDIORDY
9	SDD5	30	SSDDACK-
10	SDD10	31	GND
11	SDD4	32	IRQ15
12	SDD11	33	SDA1
13	GND	34	SD66-
14	GND	35	GND
15	SDD3	36	SDA0
16	SDD12	37	SDA2
17	SDD2	38	SCS1-
18	SDD13	39	SCS3-
19	GND	40	N.C.
20	SDD1	41	GND
21	SDD14		

Chapter 5
Display Drivers

5.1 Introduction

The Twister-T integrates S3 Graphics 128-bit ProSavage4 graphics accelerator into a single chip. TwisterT brings ainstream graphics performance to the Value PC with leading-edge 2D, 3D and DVD video acceleration into a cost effective package.Based on its capabilities, TwisterT is an ideal solution for the consumer, corporate obile users and entry level professionals. The industry 's first integrated AGP 4X solution, TwisterT combines AGP 4X performance with Microsoft Direct-X texture compression and assive 2Kx2K textures to deliver unprecedented 3D performance and i age quality for the Value PC obilemarket.5.2 Features

- High-Performance 3D Accelerator
- 128-bit 2D Graphics Engine
- DVD Playback and Video onferencing
- LCD and Flat Panel Monitor Support
- High Screen Resolution CRT Support

This Page does not contain any information.

Chapter 6
Ethernet

6.1 Introduction

The STX88602 is equipped with a high performance Plug and Play Ethernet interface which is fully compliant with the IEEE 802.3 standard.

6.2 Features

- 10Mb/s and 100Mb/s operations
- Supports 10Mb/s and 100Mb/s N-Way auto negotiation
- Full duplex capability
- Full compliance with PCI Revision 2.1
- PCI Bus Master data transfers

6.3 Drivers Supported

Bundled with popular software drivers, the STX88602 Ethernet interface allows great flexibility to work with all major networking operating systems including Novell NetWare v2.x, v3.x, v4.x, Microsoft LAN Manager, Win3.1, Win NT, Win95, IBM LAN Server, SCO UNIX or other ODI, NDIS and Packet drive compliant operating systems.

This Page does not contain any information.

Chapter 7
Award BIOS Utility

The different settings are available in the Award BIOS and along with the **STX88602** board. Also contained here are instructions on how to set up the BIOS configuration.

7.1 BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel Celeron processors in a standard IBM-AT compatible I/O system. The BIOS provides critical low-level support for standard devices such as disk drives, serial and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

7.2 BIOS Setup

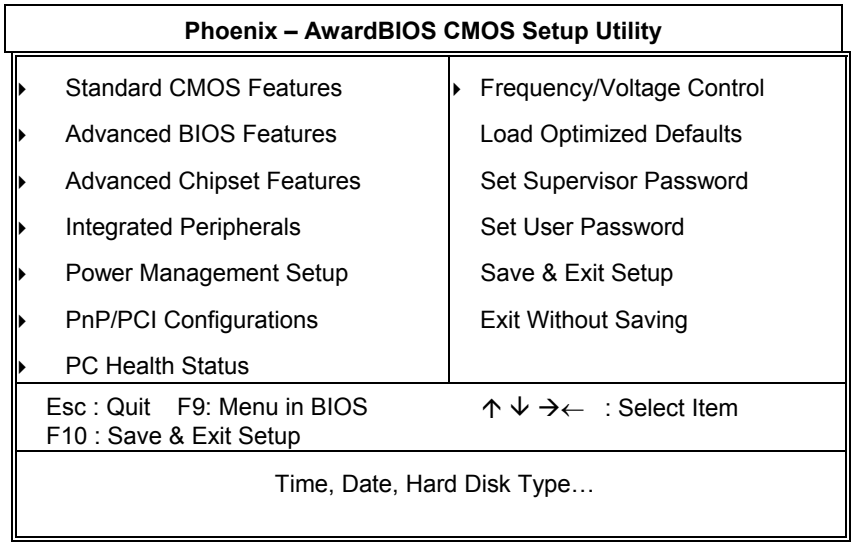
The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn ON the computer, the Award BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system OFF and back ON again. The following message will appear on the screen:

Press <DEL> to Enter Setup

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.



The section below the setup items of the Main Menu displays the control keys for this menu. Another section located at the bottom of the Main Menu, just below the control keys section, displays information on the currently highlighted item in the list.

NOTE: *If you find that your computer cannot boot after making and saving system changes with Setup, the Award BIOS, via its built-in override feature, resets your system to the CMOS default settings.*

We strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability.

7.3 Standard CMOS Setup

"Standard CMOS Setup" allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the motherboard is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

Phoenix – AwardBIOS CMOS Setup Utility
Standard CMOS Features

		Item Help
Date (mm:dd:yy)	Thu, Mar 6 2003	
Time (hh:mm:ss)	00 : 0 : 00	
		Menu Level ▶
▶ IDE Primary Master		
▶ IDE Primary Slave		Change the Day, month, Year and Century
▶ IDE Secondary Master		
▶ IDE Secondary Slave		
Drive A	1.44M, 3.5 in.	
Drive B	None	
LCD Type	T9 800x600 TFT	
Screen Expansion	Enable	
TV Type	NTSC	
Display Type During Post	VGA Default	
Display Type After Post	VGA Default	
Halt on	All, But keyboard	
Base Memory	640K	
Extended Memory	65535K	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F7: Optimized Defaults

At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following pages describe each item of this menu.

- **Date**

  The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

day	The day of week, from Sun to Sat, determined by the BIOS, is read only
date	The date, from 1 to 31 (or the maximum allowed in the month), can key in the numerical / function key
month	The month, Jan through Dec.
year	The year, depends on the year of BIOS

- **Time**

  The time format is <hour> <minute> <second> accepting either function key or numerical key. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **IDE Primary Master/Primary Slave/Secondary Master/Secondary Slave**

  The categories identify the types of one channel that have been installed in the computer. There are 45 predefined types and 2 user definable types are for Enhanced IDE BIOS. Type 1 to Type 45 are predefined. Type User is user-definable.

  Press <PgUp>/<+> or <PgDn>/<–> to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information within this category. If your hard disk drive type does not match or is not listed, you can use Type User to define your own drive type manually.

  If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

  If the controller of HDD interface is ESDI, select "Type 1".
  If the controller of HDD interface is SCSI, select "None".
  If the controller of HDD interface is CD-ROM, select "None".

CYLS.	number of cylinders	LANDZONE	landing zone
HEADS	number of heads	SECTORS	number of sectors
PRECOMP	write precom	MODE	HDD access mode

  If there is no hard disk drive installed, select NONE and press <Enter>.

- **Drive A type/Drive B type**

  The category identifies the types of floppy disk drive A or drive B installed in the computer.

None	No floppy drive installed
360K, 5.25 in	5.25 inch PC-type standard drive; 360Kb capacity
1.2M, 5.25 in	5.25 inch AT-type high-density drive; 1.2MB capacity
720K, 3.5 in	3.5 inch double-sided drive; 720Kb capacity
1.44M, 3.5 in	3.5 inch double-sided drive; 1.44MB capacity
2.88M, 3.5 in	3.5 inch double-sided drive; 2.88MB capacity

- **. LCD Type**

  This item selection includes:

  - **T0 640x480 TFT** T1 800x600 TFT
  - **T2 1024x768 TFT** T3 1280x1024 TFT
  - **T4 640x480 DSTN** T5 800x600 DSTN
  - **T6 1024x768 DSTN** T7 1024x768 TFT
  - **T8 640x480 TFT** T9 800x600 TFT
  - **T10 1024x768 TFT** T11 1280x1024 TFT
  - **T12 1400x1050 DSTN** T13 800x600 DSTN
  - **T14 1024x768 DSTN** T15 1280x1024 DSTN

- **TV Type**

  This item selection includes NTSC and PAL

- **Display Type During Post**

  This item selection includes VGA DEFAULT, CRT, LCD, CRT+LCD, TV, and CRT+TV.

- **Display Type After Post**

  This item selection includes VGA DEFAULT, CRT, LCD, CRT+LCD, TV, and CRT+TV.

- **Halt On**

  This field determines whether the system will halt if an error is detected during power up.

No errors	The system boot will halt on any error detected. (default)
All errors	Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

7.4 Advanced BIOS Features

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

Phoenix – AwardBIOS CMOS Setup Utility
Advanced BIOS Features

		Item Help
Virus Warning	Disabled	
CPU Internal Cache	Enabled	
External Cache	Enabled	Menu Level ►
CPU L2 Cache ECC Checking	Enabled	
Processor Number Feature	Enabled	Allows you to
Quick Power On Self Test	Enabled	choose the VIRUS
First Boot Device	Floppy	warning feature
Second Boot Device	HDD-0	for IDE Hard disk
Third Boot Device	LS120	boot sector
Boot Other Device	Enabled	protection. If this
Onboard Lan boot Rom	Disable	
Optimized default select	BIOS O ptimized	
Cardbus IRQ Mode select	PCKN4000	
Swap Floppy Drive	Disabled	function is enable
Boot Up Floppy Seek	Enabled	and someone
Boot Up NumLock Status	On	attempts to write
Gate A20 Option	Fast	data into this area,
Typematic Rate Setting	Disabled	BIOS will show
Typematic Rate (Chars/Sec)	6	a warning
Typematic Delay (Msec)	250	message on
Security Option	Setup	screen and alarm
PS/2 Mouse Control	Enable	beep
OS Select For DRAM > 64MB	Non-OS2	
Video BIOS Shadow	Enabled	
C8000-CBFFF Shadow	Disabled	
CC000-CFFFF Shadow	Disabled	
D0000-D3FFF Shadow	Disabled	
D4000-D7FFF Shadow	Disabled	
D8000-DBFFF Shadow	Disabled	
DC000-DFFFF Shadow	Disabled	
Small Logo(EPA) Show	Disabled	

↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F7: Optimized Defaults

- **Virus Warning**

  This item protects the boot sector and partition table of your hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message. If this occurs, you can either allow the operation to continue or run an anti-virus program to locate and remove the problem.

  NOTE: *Many disk diagnostic programs, which attempt to access the boot sector table, can cause the virus warning. If you will run such a program, disable the Virus Warning feature.*

- **CPU Internal Cache / External Cache**

  Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. These items allow you to enable (speed up memory access) or disable the cache function. By default, these are ***Enabled***.

- **CPU L2 Cache ECC Checking**

  When enabled, this allows ECC checking of the CPU's L2 cache. By default, this field is ***Enabled***.

- **Processor Number Feature**

  When a Pentium® III CPU is installed, the system automatically detects it and displays this item.

- **Quick Power On Self Test**

  This option speeds up Power On Self Test (POST) after you turn on the system power. If set as Enabled, BIOS will shorten or skip some check items during POST. The default setting is *"Enabled"*.

Enabled	Enable Quick POST
Disabled	Normal POST

- **First/Second/Third Boot Device**

  These items allow the selection of the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. The wide range of selection includes Floppy, LS120, ZIP100, HDD0~3, SCSI, and CDROM.

- **Boot Other Device**

  This item allows the user to enable/disable the boot device not listed on the First/Second/Third boot devices option above. The default setting is *Enabled*.

- **Onboard Lan boot**

  Choice Enable when you need boot on Lan Funtion, Like PXE ,RPL

- **Optimized default Select**

  This item allows you load bios default setup or your previous setup .

  [BIOS Optimized]

  Choice Bios Optimized than save & exit . Next time when you Run [DEL] to setup items Main Menu Load Optimized Defaults ,system will load bios defaults setting .

  [Previous Setup]

  Choice Previous setup than save & exit . Next time when you Run [DEL] to setup items Main Menu .Bios will backup your change to Flash bios .Than save & exit .Your setting will be save and can't be clear until you change the setting to Bios Optimized than save & exit .

- **Swap Floppy Drive**

  This allows you to determine whether to enable Swap Floppy Drive or not. When enabled, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A. By default, this field is set to *Disabled.*

- **Boot Up Floppy Seek**

  During POST, BIOS will determine the floppy disk drive type, 40 or 80 tracks, installed in the system. 360Kb type is 40 tracks while 720Kb, 1.2MB and 1.44MB are all 80 tracks. The default value is *"Enabled"*.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. There will be no warning message displayed if the drive installed is 360K.

- **Boot Up NumLock Status**

  This option enables and disables the numberlock function of the keypad. The default value is *"On"*.

On	Keypad functions confine with numbers
Off	Keypad functions convert to special functions (i.e., left/right arrow keys)

- **Gate A20 Option**

The default value is *"Fast"*.

Normal	The A20 signal is controlled by keyboard controller or chipset hardware.
Fast	Default: Fast. The A20 signal is controlled by Port 92 or chipset specific method.

- **Typematic Rate Setting**

This determines the typematic rate of the keyboard. The default value is *"Disabled"*.

Enabled	Enable typematic rate and typematic delay programming
Disabled	Disable typematic rate and typematic delay programming. The system BIOS will use default value of these 2 items and the default is controlled by keyboard.

- **Typematic Rate (Chars/Sec)**

This option refers to the number of characters the keyboard can type per second. The default value is *"6"*.

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

- **Typematic Delay (Msec)**

This option sets the display time interval from the first to the second character when holding a key. The default value is *"250"*.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

- **Security Option**

  This item allows you to limit access to the system and Setup, or just to Setup. The default value is *"Setup"*.

System	The system will not boot and access to Setup will be denied if the incorrect password is entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

NOTE: *To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything, just press <Enter> and it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.*

- **PS/2 Mouse Control**
- **OS Select for DRAM > 64MB**

  This segment is specifically created for OS/2 when DRAM is larger than 64MB. If your operating system is OS/2 and DRAM used is larger the 64MB, you have to select "OS 2", otherwise (under non-OS2), default is NON-OS2. The default value is *"Non-OS2"*.

- **Video BIOS Shadow**

  Video shadowing increases the video speed by copying the video BIOS into RAM. However, it is still optional depending on the chipset design. The default value of this option is *"Enabled"*.

Enabled	Video BIOS shadowing is enabled
Disabled	Video BIOS shadowing is disabled

- **C8000 - CBFFF Shadow/DC000 - DFFFF Shadow**

  Shadowing ROM reduces available memory between 640KB and 1024KB. These fields determine whether optional ROM is copied to RAM or not.

7.5 Advanced Chipset Features

Since the features in this section are related to the chipset on the CPU board and are completely optimized, you are not recommended to change the default settings in this setup table unless you are well oriented with the chipset features.

Phoenix – AwardBIOS CMOS Setup Utility
Advanced Chipset Features

DRAM Timing By SPD	Enabled	Item Help
DRAM Clock	Host CLK	
SDRAM Cycle Length	3	Menu Level ►
Bank Interleave	Disabled	
Memory Hole	Disabled	
P2C/C2P Concurrency	Enabled	
System BIOS Cacheable	Disabled	
Video RAM Cacheable	Disabled	
Frame Buffer Size	16M	
AGP Aperture Size	64M	
AGP-4X Mode	Enabled	
USB Port1 & Port2	Enabled	
USB Port3 & Port4	Disabled	
USB Keyboard Support	Disabled	
OnChip Sound	Auto	
CPU to PCI Write Buffer	Enabled	
PCI Dynamic Bursting	Enabled	
PCI Master 0 WS Write	Enabled	
PCI Delay Transaction	Disabled	
PCI#2 Access #1 Retry	Enabled	
AGP Master 1 WS Write	Disabled	
AGP Master 1 WS Read	Disabled	

↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F7: Optimized Defaults

- **DRAM Timing By SPD**

  This item allows you to select the value in this field, depending on whether the board has paged DRAMs or EDO (extended data output) DRAMs.

- **DRAM Clock**

  This item allows you to select the DRAM clock value, depending on whether the board has paged DRAMs or EDO (extended data output) DRAMs. The available choices are 66 MHz and Host CLK.

- **SDRAM Cycle Length**

  When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer. The default setting is ***3***.

- **Memory Hole**

  To improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB. The available choices are 15M-16M and Disabled.

- **P2C/C2P Concurrency**

  This item allows you to enable/disable the PCI to CPU, CPU to PCI concurrency. By default, this field is set to ***Enabled***.

- **System BIOS Cacheable**

  Selecting *Enabled* allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

  The choice: Enabled, Disabled.

- **Video RAM Cacheable**

  Select Enabled allows caching of the A/B segment, resulting in better system performance.

  The Choice: Enabled, Disabled.

- **AGP Aperture Size**

  The field sets aperture size of the graphics. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The options available are 4M, 8M, 16M, 32M, 64M, 128M and 256M.

- **USB Port1(3) & Port2(4)**

  This should be enabled if your system has a USB installed on the system board and you wish to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature. The available choices are Enabled and Disabled.

- **USB Keyboard Support**

  Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard. The options available are Enabled, Disabled.

- **CPU to PCI Write Buffer**

  When this field is *Enabled,* writes from the CPU to the PCI bus are buffered, to compensate for the speed differences between the CPU and the PCI bus. When *Disabled*, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle.

  buffered and the CPU must wait until the write is complete before starting another write cycle.

- **PCI Dynamic Bursting**

  This item allows you to enable/ disable the PCI dynamic bursting function.

- **PCI Master 0 WS Write**

  When *Enabled,* writes to the PCI bus are executed with zero wait states.

- **PCI Delay Transaction**

  The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select *Enabled* to support compliance with PCI specification version 2.1. The default setting is ***Disabled***.

- **PCI#2 Access #1 Retry**

  When disabled, PCI#2 will not be disconnected until access finishes (default). When enabled, PCI#2 will be disconnected if max retries are attempted without success.

- **AGP Master 1 WS Write**

  When *Enabled,* writes to the AGP(Accelerated Graphics Port) are executed with one wait states..

- **AGP Master 1 WS Read**

  When *Enabled,* read to the AGP (Accelerated Graphics Port) are executed with one wait states..

7.6 Integrated Peripherals

This option sets your hard disk configuration, mode and port.

Phoenix – AwardBIOS CMOS Setup Utility
Integrated Peripherals

		Item Help
OnChip IDE Channel0	Enabled	
OnChip IDE Channel1	Enabled	
IDE Prefetch Mode	Enabled	Menu Level ►
Primary Master PIO	Auto	
Primary Slave PIO	Auto	
Secondary Master PIO	Auto	
Secondary Slave PIO	Auto	
Primary Master UDMA	Auto	
Primary Slave UDMA	Auto	
Secondary Master UDMA	Auto	
Secondary Slave UDMA	Auto	
Init Display First	PCI Slot	
IDE HDD Block Mode	Enabled	
Onboard FDD Controller	Enabled	
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	
UART 2 Mode	Standard	
IR Function Duplex	Half	
TX, RX inverting enable	No, Yes	
Onboard Parallel Port	378/IRQ7	
Onboard Parallel Mode	Normal	
ECP Mode Use DMA	3	
Parallel Port EPP Type	EPP1.9	
Onboard Serial Port 3	3E8H	
Serial Port 3 Use IRQ	IRQ10	
Onboard Serial Port 4	2E8H	
Serial Port 4 Use IRQ	IRQ11	
Onboard Legacy Audio	Enabled	
Sound Blaster	Disabled	
SB I/O Base Address	220H	
SB IRQ Select	IRQ 5	
SB DMA Select	DMA 1	
MPU-401	Disabled	
MPU-401 I/O Address	330-333H	

↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F7: Optimized Defaults

- **On-Chip IDE Channel0/Channel1**

  The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately.

  The choice: Enabled, Disabled.

- **IDE Prefetch Mode**

  The onboard IDE drive interfaces supports IDE prefetching for faster drive accesses. If you install a primary and/or secondary add-in IDE interface, set this field to *Disabled* if the interface does not support prefetching.

- **Primary/Secondary Master/Slave PIO**

  The four PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

  The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

- **Primary/Secondary Master/Slave UDMA**

  Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 98 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, select Auto to enable BIOS support.

  The Choice: Auto, Disabled.

- **Init Display First**

  This item allows you to decide to active whether PCI Slot or on-chip VGA first.

  The choice: PCI Slot, Onboard.

- **IDE HDD Block Mode**

  Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

  The choice: Enabled, Disabled

- **Onboard FDD Controller**

  Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field.

  The choice: Enabled, Disabled.

- **Onboard Serial Port 1/Port 2**

  Select an address and corresponding interrupt for the first, second and twist serial ports.

  The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

- **UART 2 Mode**

  This item allows you to select UART mode. By default, this field is set to *Standard*.

- **IR Function Duplex**

  This item allows you to select the IR half/full duplex funcion.

- **TX,RX inverting enable**

  This item allow you to enable the TX, RX inverting which depends on different H/W requirement. This field is not recommended to change its default setting for avoiding any error in your system.

- **Onboard Parallel Port**

  This item allows you to determine access onboard parallel port controller with which I/O address.

  The choice: 3BC/IRQ7, 378/IRQ7, 278/IRQ5, Disabled.

- **Onboard Parallel Mode**

  Select an operating mode for the onboard parallel (printer) port. Select *Normal, Compatible,* or *SPP* unless you are certain your hardware and software both support one of the other available modes.

  The choice: SPP, EPP, ECP, ECP+EPP.

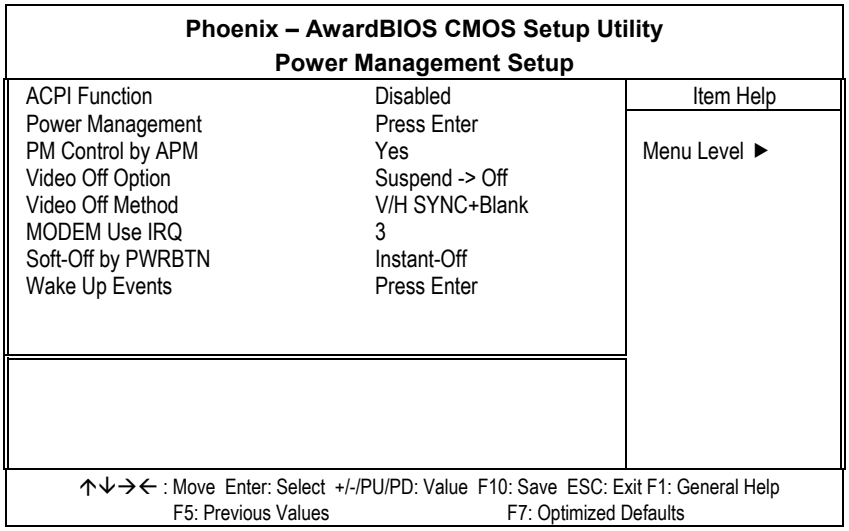
- **ECP Mode Use DMA**

  Select a DMA channel for the parallel port for use during ECP mode.

  The choice: 3, 1.

7.7 Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.


Phoenix – AwardBIOS CMOS Setup Utility
Power Management Setup
ACPI Function Disabled
Power Management Press Enter
PM Control by APM Yes
Video Off Option Suspend -> Off
Video Off Method V/H SYNC+Blank
MODEM Use IRQ 3
Soft-Off by PWRBTN Instant-Off
Wake Up Events Press Enter
Item Help
Menu Level ▶
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F7: Optimized Defaults

- **ACPI Function**

  This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The choice: Enabled, Disabled.

- **Power Management**

  This item allows you to select the Power Management mode.
  The choice: User Define, Min Saving, Max Saving.

- **ACPI Suspend Type**

  This item allows you to select the APCI suspend type.
  S1 (POS) => Power On Suspend, S3 (STR) => Suspend To DRAM
  The choice: S1 (POS), S3 (STR).

- **PM Control by APM**

  When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If Advance Power Management (APM) is installed on your system, selecting Yes gives better power savings. If the Max. Power Saving is not enabled, this will be preset to *No*.

- **Video Off Option**

  When enabled, this feature allows the VGA adapter to operate in a power saving mode.

Always On	Monitor will remain on during power saving modes.
Suspend --> Off	Monitor blanked when the system enters the Suspend mode.
Susp,Stby --> Off	Monitor blanked when the system enters either Suspend or Standby modes.
All Modes --> Off	Monitor blanked when the system enters any power saving mode.

- **Video Off Method**

  This determines the manner in which the monitor is blanked.

V/H SYNC + Blank	This causes the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards to select video power management values.
Blank Screen	This option only writes blanks to the video buffer.

- **Video Off Method**

  In suspending, this item allows you to select the CRT closed method under APM mode.

  The choice: Blank Screen, V/H SYNC+Blank, DPMS

- **MODEM Use IRQ**

  APM 1.2 function used only.

  The choice: NA, 3, 4, 5, 7, 9, 10, 11

- **Soft-off by PWRBTN**

  This only works with systems using an ATX power supply. It also allows tser to define the type of soft power OFF sequence the system will follow.

Instant-Off (default)	This option follows the conventional manner systems perform when power is turned OFF. Instant-Off is a soft power OFF sequence requiring only the switching of the power supply button to OFF.
Delay 4 Sec.	Upon turning OFF system from the power switch, this option will delay the complete system power OFF sequence by approximately 4 seconds. Within this delay period, system will temporarily enter into Suspend Mode enabling you to restart the system at once.

- **Wake Up Events**

  An input signal on the network 2 awakens the system from a soft-off state.

7.8 PNP/PCI Configuration

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

Phoenix – AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

		Item Help
PNP OS Installed	No	
Reset Configuration Data	Disabled	Menu Level ▶
Resources Controlled By	Manual	
IRQ Resources	Press Enter	Select Yes if you are using a Plug and play capable operating system select No if you need the BIOS to configure non-boot devices
DMA Resources	Press Enter	
PCI/VGA Palette Snoop	Disabled	
Assign IRQ For VGA	Enabled	
Assign IRQ For USB	Enabled	

↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help

- **PNP OS Installed**

  This item allows you to determine install PnP OS or not. The options available are Yes and No.

- **Reset Configuration Data**

  Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup or if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot. The options available are Enabled and Disabled.

- **Resource controlled by**

  The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®98. The options available are Auto and Manual.

- **IRQ Resources**

  When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

- **DMA Resources**

  When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:

  - Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific DMA channel.
  - PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

  The default value is *"PCI/ISA PnP"*.

- **PCI/VGA Palette Snoop**

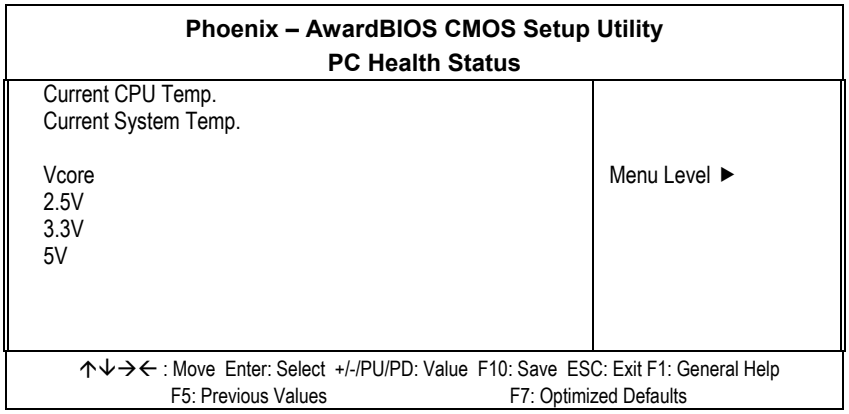
  Leave this field at *Disabled*.

  The choice: Enabled, Disabled.

- **Assign IRQ For USB/VGA**

  Enable/Disable to assign IRQ for USB/VGA. The options available are Enabled, Disabled

7.9 PC Health Status



.

- **Current CPU Temp.**
  Show you the current CPU temperature.
- **Current System Temp.**
  These read-only fields reflect the functions of the hardware thermal sensor that monitors the chip blocks and system temperatures to ensure the system is stable.
- **Vcore/2.5V/3.3V/5V**
  Show the voltage of Vcore/2.5V/3.3V/5V.

7.10 Frequency/Voltage Control

CMOS Setup Utility-Copyright © 1984-2001 Award Software Frequency/Voltage Control		
Auto Detect DIMM/PCI Clk	Enabled	
Spread Spectrum	Disabled	Menu Level ►
CPU Host/PCI Clock	Default	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F7: Optimized Defaults		

- **Auto Detect DIMM/PCI Clk**

  When enabled, this item will auto detect if the DIMM and PCI socket have devices and will send clock signal to DIMM and PCI devices. When disabled, it will send the clock signal to all DIMM and PCI socket.

  The choice: Enabled, Disabled.

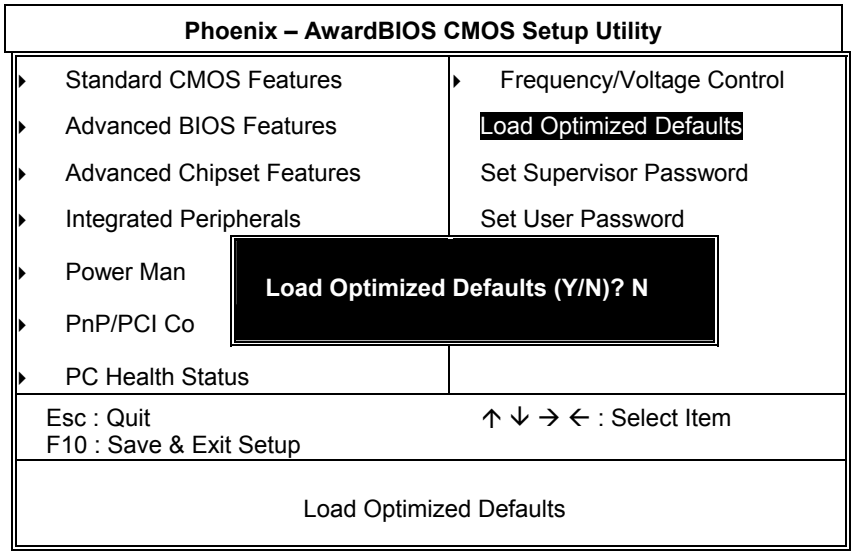
- **Spread Spectrum**

  This item allows you to enable/disable the spread spectrum modulate.

  The choice: Enabled, Disabled.

7.11 Load Optimized Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.



To load SETUP defaults value to CMOS SRAM, enter "Y". If not, enter "N".

7.12 Set Supervisor/User Password

You can set either supervisor or user password, or both of then. The differences between are:

- **supervisor password:** can enter and change the options of the setup menus.
- **user password:** just can enter but do not have the right to change the options of the setup menus.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password with eight characters at most, and press <Enter>. The password typed will now clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

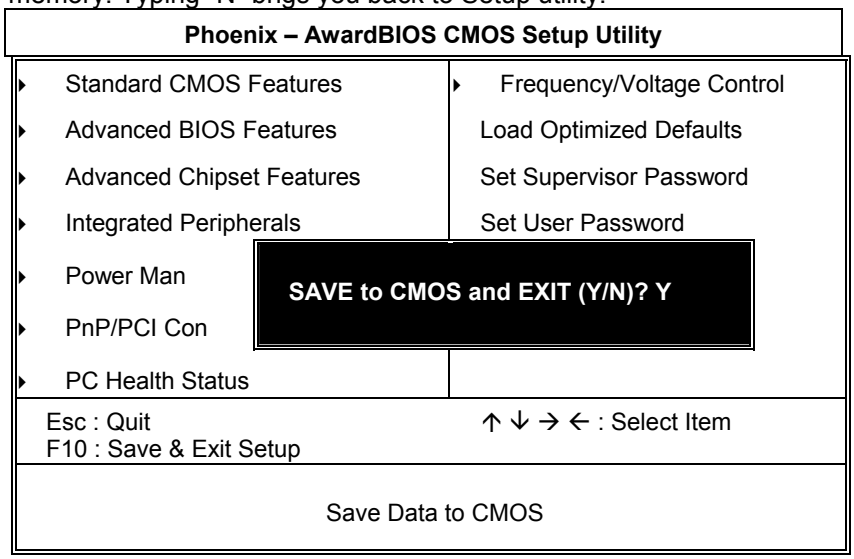
When a password is enabled, you have to type it every time you enter Setup. This prevents any unauthorized person from changing your system configuration.

Additionally when a password is enabled, you can also require the BIOS to request a password every time the system reboots. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during boot up and entry into Setup. If set as "Setup", prompting will only occur prior to entering Setup.

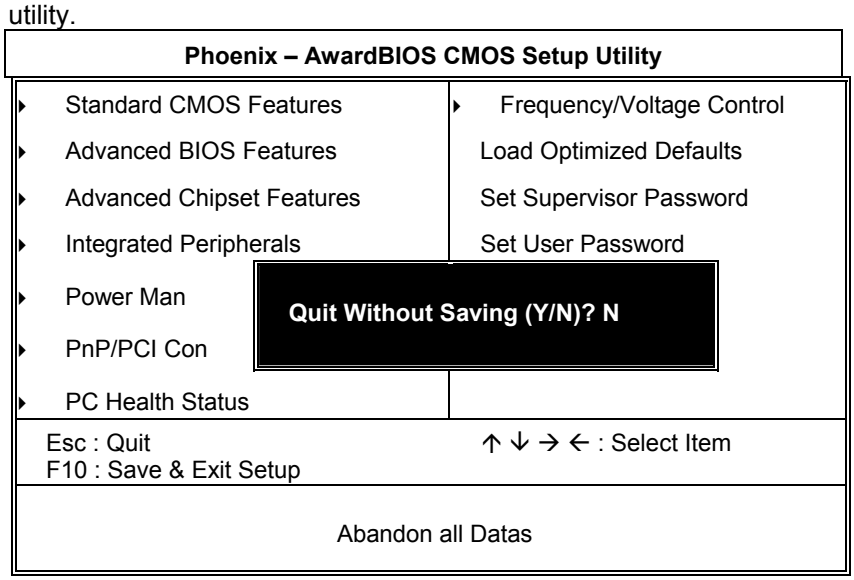
7.13 Save & Exit Setup

This allows you to determine whether or not to accept the modifications. Typing "Y" quits the setup utility and saves all changes into the CMOS memory. Typing "N" brigs you back to Setup utility.



7.14 Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing "Y" will quit the Setup utility without saving the modifications. Typing "N" will return you to Setup utility.



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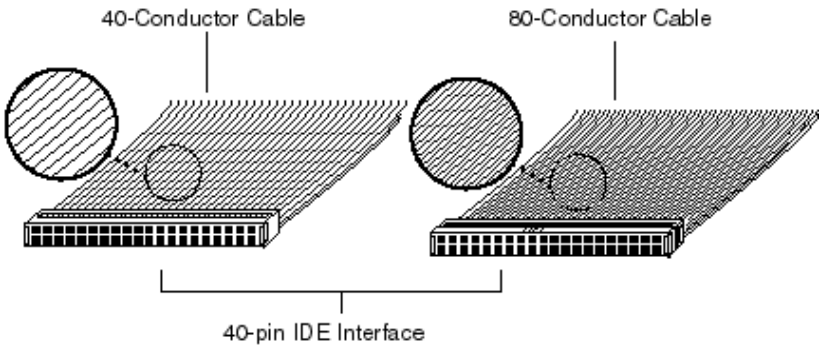
Appendix A
Ultra DMA/66/100 Reference

Overview

Ultra ATA66/100 is a low cost extension of the Ultra ATA/66/100 hard drive interface that enhance its burst data rate. Also known as Ultra DMA/100 and Fast ATA-2, Ultra ATA/66/100 allows host computers to send and receive data at 100 MB/s, which is triple the data transfer speeds of 33.3 MB/s of Ultra DMA/33. The result is maximum disk performance under PCI local bus environments.

At its fast burst data rates, Ultra ATA66/100 will go farther than Ultra ATA66/100 in removing bottlenecks associated with data transfers, especially during sequential operations. Ultra ATA66/100 also delivers heightened data integrity to the EIDE interface through use of a 40-pin 80-conductor cable, and CRC (Cyclic Redundancy Check) error detection code. The 80-conductor cable reduces crosstalk and improves signal integrity by providing 40 additional ground lines between the 40-pin IDE signal and ground lines. The connector is plug-compatible with existing 40-pin headers, and the incremental cost for the cable should be minimal. As with Ultra ATA/33, CRC ensures the integrity of transferred data.



Background

Ultra ATA/100 is the latest ATA/IDE hard drive data transfer protocol for moving data between the hard drive buffer and the system memory. The previous interface was Ultra ATA/66, with a maximum burst transfer rate of 66.6 MB/s. Prior to Ultra ATA/66 was Ultra ATA/33 with a maximum burst transfer rate of 33.3 MB/s.

By increasing the burst transfer rates of IDE drives, Ultra ATA/100 brings the effective transfer rate of the system's bus and a drive's internal data rate that much closer into balance. Ultra ATA/100 allows system designers to provide greater system throughput, particularly for long sequential transfers required by audio/visual applications.

Host data transfer rates must exceed media data transfer rates or else performance is reduced because of additional revolutions due to buffer full/empty conditions on reads/writes.

Host Data Rate Requirements

As you can see by the chart, the host data transfer rate doubles about every three years. The chart indicates that Ultra ATA/100 will reach its limits by 2000. The industry has supported host transfer data rates doubling previously with:

- DMA Mode 2 at 16.6 MB/s in 1994
- Ultra ATA/33 at 33.3 MB/s in 1997
- Ultra ATA/66 at 66.6 MB/s in 1999
- Ultra ATA/100 at 100MB/s in 2000

With continued expansions in disk capacity and higher rotational speeds, the hard drive's internal disk rates also continue to increase. The transfer of large files, often written sequentially on the hard drive, is particularly affected by the transfer rate. During sequential reads, the hard drive, because of its fast internal data rate, may fill its buffer faster than the host can empty it when using the Ultra ATA/66 or the older multi-word DMA interfaces. Performance bottlenecks usually result in this connection between the host and the hard drive. Improving the interface to keep up with internal data rate improvements is exactly what Ultra ATA/100 can achieve.

As previously mentioned, fast host data transfer rates help maintain sequential media transfers, but they also accelerate cache hits. The following table is based on all commands are either a cache hit (data comes from the buffer and has <1 ms latency), or a cache miss (data comes from the media and has >10 ms latency.)

Ultra ATA/66 Performance Benefit		
	Cache Miss	Cache Hit
Sequential	Yes	Yes
Random	No	Yes

Backward Compatibility

The Ultra ATA/100 protocol and commands are designed to be compatible with existing ATA devices and systems. Drives implementing Ultra ATA/100 are fully backward compatible with older ATA modes, including Ultra ATA/33/66. It will handle all the data transfer modes. The slower modes will be supported with a different clock signal and clock divider. The slower modes previously worked with a standard 40-pin interface cable, but Ultra ATA/66/100 requires a 40-pin 80-conductor cable for modes 3 and 4.

	Data Transfer Rate (max.)	Cable	Conductors	CRC
DMA Mode1	11.1 MB/s	40-pin IDE	40-pin	No
Multi-word DMA Mode 1	13.3 MB/s	40-pin IDE	40-pin	No
Multi-word DMA Mode 2	16.6 MB/s	40-pin IDE	40-pin	No
Ultra ATA Mode 2	33.3 MB/s	40-pin IDE	40-pin	Yes
Ultra ATA Mode 4	66.6 MB/s	40-pin IDE	80-pin	Yes
Ultra ATA Mode 5	99.9 MB/s	40-pin IDE	80-pin	Yes

Hard drives that support Ultra ATA/66/100 also support Ultra ATA/33 and multi-word DMA, and can be used with existing multi-word DMA host chipsets. Installed PCs without Ultra ATA/100 capability can use new hard drives in legacy ATA modes at transfer rates up to 33.3 MB/s. However, by upgrading with an Ultra ATA/100 PCI adapter card and 80-conductor cable, they can also take advantage of the interface's newer speed and data integrity features. Bus timings must be scaled to transfer up to twice as fast. PC vendors who would like to incorporate the advantages of Ultra ATA/100 in new systems can do so by using new chipsets and motherboards from Intel and other leading vendors that license the technology. Although a new cable is required for Ultra ATA/66/100, the chipset pin count remains the same at 40.

System Requirements for Ultra ATA/66

To use the Ultra ATA/66/100 technology, a system must have:

- Ultra ATA/66/100 compatible logic either on the system motherboard, or on an Ultra DMA PCI adapter card
- Ultra DMA compatible BIOS
- DMA-aware device driver for the operating system
- Ultra ATA/66/100-compatible IDE device such as a hard drive or CD-ROM drive
- 40-pin 80-conductor cable

Frequently Asked Questions

- **Can I run UDMA/66/100 on a 40 pin 40 conductor cable?**

  No, the UDMA/66/100 technology is defined such that the PC and the HDD can both detect the presence of the 80-conductor cable. UDMA/66/100 will not be enabled unless the 80-conductor cable is present.

- **I Have an UDMA/33 system today. How can I support UDMA/66/100?**

  An existing system can be upgraded by purchasing a PCI-EIDE controller that supports UDMA/66/100.

- **Do Microsoft Operating Systems support UDMA?**

  Windows releases indicate that they all support DMA transfers. Windows does not know the difference between Ultra ATA/33 or Ultra ATA/66/100. Your HDD, your controller and the BIOS determine UDMA data transfer rate. This applies for all the following Windows operating systems:

  - Windows 98
  - Windows NT Service Pack 3
  - Windows 95 OEM Service Release 2

- **I don't have a system that supports Ultra ATA/66/100, can I run the Ultra ATA/66/100 HDD in it?**

  Yes, the HDD will not run in UDMA/66/100 mode but instead is a slower compatible mode such as Ultra ATA/33, DMA Mode 2 (16.6 MB/s) or PIO Mode 4 (16.6MB/s)

- **Can I mix Ultra ATA/33 and Ultra ATA/66/100 drives on the same cable?**

  Yes, a legacy ATA (IDE) specification drive can coexist with an Ultra ATA/66/100 drive. However, for the Ultra ATA/66/100 device to attain Ultra DMA 4 mode, an Ultra ATA/66/100 capable cable is required.

- **What are some common troubleshooting steps?**
  - Make sure the cable is Ultra ATA/66/100 capable. An Ultra ATA/66/100-capable cable is a 40-pin, 80-conductor cable with a black connector on one end, a blue connector on the other end and a gray connector in the middle. In addition, line 34 on the cable should be notched or cut (this may be difficult to see with the human eye).
  - Make sure the system board is capable of Ultra ATA/66/100. An Ultra ATA/66/100 capable system board has a detect circuit with a capacitor for detecting line 34 missing on the cable. If there is no capacitor, the system can wrongly detect the presence of an Ultra ATA/66/100 cable and therefore try to configure the device for a higher transfer rate.
  - Some system boards may not successfully handle Ultra ATA/66/100 on both ATA (IDE) channels. If you have difficulty, consider troubleshooting with the device in the Primary Master position.
  - Contact the system board manufacturer for the latest BIOS upgrade and any Ultra ATA/66/100 special device drivers or patches.
  - Make sure the operating system is DMA capable and that the DMA mode is activated. (For Windows 95/98, check Device Manager | Drive Settings tab for a check box.)
  - Make sure the drive is Ultra ATA/66/100 capable and has been configured to run at Ultra ATA/66/100 transfer rates. (Seagate drives require an Ultra ATA/66/100 activation utility.)